

VACCINE TREATMENT OF KALA AZAR.

By MAJOR LEONARD ROGERS, I.M.S.

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Major Rogers said:—As long ago as 1897 I pointed out the marked reduction in the number of the leucocytes in the blood of kala-azar patients, and have since found it to be the most constant and characteristic change in uncomplicated cases of this disease, and one which is of the greatest diagnostic and prognostic value. The loss is chiefly one of the polynuclears, which are commonly only from one-tenth to one twentieth of the normal numbers, the death-rate being in proportion to the degree of their destruction. I have previously drawn attention to the remarkable recoveries which sometimes follow septic complications such as cancrum oris, but only when a marked increase of the total polynuclears occurs. As I also found cancrum oris in these cases to be accompanied by a general staphylococcus infection, which sometimes appears to produce a disappearance of the parasites of kala-azar from the internal organs I suggested and used a vaccine made of these organisms killed at 60 C, in accordance with Sir A. F. Wright's methods, and recorded in my work on Fevers in the Tropics that this method of treatment had in several cases appeared to be of undoubted value. During 1908 I have been able to further test this method, thanks largely to the kind permission of Lieutenant-Colonel Harris, I.M.S., to try it on cases in his wards at the Calcutta Medical College Hospital. The accompanying table includes all the uncomplicated cases so treated during the past year, being thus a consecutive series of unselected cases, which furnish the basis for the following observations.

Blood counts were made by myself before the vaccine was used, and again before subsequent doses, which were usually given at the intervals of from a week to ten days. One hundredth of an ordinary agar slop culture of a staphylococcus, originally obtained from a cancrum oris case of kala-azar, was contained in 2½ minims of the stock vaccine (about 250,000,000 cocci) and the doses rapidly increased from 2½ to 10 minims or more. The increases of the leucocytes noted were thus present from

7 to 10 days after the previous dose of vaccine had been subcutaneously injected, either in the upper arm or over the spleen, so that they represent more than the immediate effect of each dose. In addition to the counts of the red and the white corpuscles (which furnish data for calculating the ratio of the white to the red corpuscles), I also made a differential count in most of the cases, so that the actual increase in the total polynuclears could also be estimated as shown in the table.

Effect on the number of Leucocytes in the Blood.—The first noteworthy feature is the marked increase in the total number of the leucocytes which followed the injections in 12 of the 14 cases, although in two, namely Nos. 6 and 15, it was unfortunately only temporary in nature, the numbers subsequently declining again. Of the remaining two, in No. 1 a slight temporary total increase, without any rise in the total polynuclears, was obtained, while in No. 7 no increase followed the single small dose observed. In the great majority of the cases, then, a marked leucocyte increase was obtained and was accompanied by a rise in both the proportion of the white to the red corpuscles and in the percentage and total numbers of polynuclears, which is the desired result.

The General Effects of the Treatment.—As the patients were all natives, who could not be kept in hospital for long periods, only the immediate general effects can be recorded. Some were not long enough in hospital to allow of much permanent good being effected, while No. 3 contracted dysentery and died. The majority, however, showed distinct signs of improvement, the temperature declining to a very low intermittent form or to normal, and weight being gained. The results, as a whole, were certainly better than by any other treatment I have seen tried in these very unsatisfactory cases. The patients were all in an advanced stage of the disease, so that earlier and more persistent trials of this treatment seem to be indicated, especially as it can be used in addition to any drugs, which may be considered of value.

No.	Race.	Sex.	Age.	Date of Vaccine.	Dose of Vaccine.	Date of Blood Exam.	Red Corpuscles.	White Corpuscles.	Ratio red to white.	Total Polynuclears.	Percentage Polynuclears.	
1	H.	M.	21	11-3	5 Min.	11-3	3,600,000	2,875	1-1,254	1,874	65.2	Fever on.
...	...	...	...	20-3	10 "	20-3	3,880,000	3,500	1-1,109	1,613	47	
...	...	...	...	...	...	25-3		3,125	...	1,663	53.6	Fever much lower. Improved.
2	Nt. Ch.	M.	18	23-2	5 Min.	22-2	2,465,000	625	1-3,944	369	59	
...	...	...	...	5-3	7½ "	4-3	4,420,000	3,125	1-1,414	2,031	65	
...	...	...	...	14-3	7½ "	14-3	3,230,000	3,625	1-1,326	1,286	49	Very much improved. Temperature normal.
3	H.	F.	12	5-3	5 "	4-3	3,430,000	2,125	1-1,614	1,126	53	Much improved. Temperature normal.
...	...	...	...	15-3	5 "	15-3	2,760,000	6,375	1- 440	4,692	73.6	Subsequently died of dysentery.
...	...	...	...	...	...	...	3,190,000	6,250	1- 510	4,700	75.2	
4	H.	M.	30	10-3	5 Min.	7-3	4,200,000	2,875	1-1,460	2,085	73.2	
...	...	...	...	...	...	19-3	4,260,000	12,000	1- 355	7,488	82.4	Much improved. No fever.
5	E.	F.	17	2-4	5 Min.	1-4	3,880,000	2,875	1-1,348	1,035	36	
...	...	...	...	10-4	7½ "	10-4	2,820,000	4,000	1- 705	2,080	52	Much improved. Temperature normal.
6	E.	F.	45	24-3	5 "	23-3	2,770,000	1,500	1-1,847	1,284	85.6	
...	...	...	...	31-3	7½ "	31-3	3,490,000	3,375	1-1,016	2,916	86.4	
...	...	...	...	7-4	7½ "	7-4	2,930,000	1,375	1-2,131	978	71	No improvement, died of Pneumonia later.
7	M.	M.	12	27-5	2½ "	27-5	2,105,000	2,125	1- 982	...	...	
...	...	...	...	5-6	5 "	5-6	2,505,000	1,375	1-1,322	...	...	No improvement, lost weight.
8	E.	F.	30	28-4	5 "	15-4	2,500,000	1,500	1-1,667	870	58	
...	...	...	...	8-5	7½ "	8-5	2,860,000	2,750	1-1,040	1,432	63	
...	...	...	...	16-5	10 "	16-5	2,815,000	1,375	1-1,301	...	...	
...	...	...	...	16-6	10 "	16-6	2,705,000	1,250	1-2,164	...	...	No increase of Leucocytes.
...	...	...	...	2-7	15 "	2-7	2,880,000	1,625	1-1,754	...	...	Gained in weight, slight improvement.
9	Nt. Ch.	M.	17	29-4	5 "	29-4	4,130,000	2,250	1-1,613	1,192	53	
...	...	...	...	7-5	7½ "	7-5	3,150,000	3,125	1-1,008	1,651	53	No change.
10	H.	M.	12	5-7	5 "	5-7	2,580,000	1,250	1-2,069	...	...	
...	...	...	...	14-7	7½ "	14-7	3,735,000	2,500	1-1,490	1,350	54	Improved. Temperature normal.
11	H.	M.	24	30-1	2½ "	22-1	3,730,000	3,375	1-1,105	796	23.6	
...	...	...	...	14-2	5 "	14-2	3,860,000	7,750	1- 498	1,116	14.4	
...	...	...	...	11-3	7½ "	11-3	3,714,000	1,250	1-2,968	237	19	
...	...	...	...	25-3	10 "	20-3	4,120,000	1,875	1-2,197	1,143	61	
...	...	...	...	4-4	10 "	4-3	4,520,000	4,000	1-1,130	2,250	57	
...	...	...	...	11-4	10 "	11-4	4,060,000	5,000	1- 812	3,000	60	Greatly improved and gained weight.
12	H.	F.	32	5-11	10 "	4-11	2,350,000	2,375	1- 984	...	...	No fever.
...	...	...	...	...	...	16-11	2,420,000	3,500	1- 691	2,296	65.6	Improved. No fever.
13	M.	M.	38	11-11	2½ Min.	11-11	2,190,000	3,000	1- 730	...	...	
...	...	...	...	23-11	5 "	23-11	2,220,000	6,000	1- 370	3,168	52.8	
...	...	...	...	30-11	7½ "	30-11	2,345,000	6,750	1- 348	...	...	Much improved, gained weight.
14	E.	M.	15	...	...	19-12	2,515,000	3,375	1- 745	...	...	
...	...	...	...	23-1	2½ Min.	23-1	2,105,000	2,000	1-1,052	...	...	Worse, vaccine commenced.
...	...	...	...	2-2	10 "	2-2	1,715,000	1,715	1-1,744	...	...	
...	...	...	...	...	...	19-2	2,900,000	5,000	1- 580	...	...	Temperature nearly normal, gaining weight.

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